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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/045,467	11/08/2001	Fang-Hvi Chan	B-4373 619285-5	4294

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EXAMINER

JORGENSEN, LELAND R

ART UNIT	PAPER NUMBER
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2675

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DATE MAILED: 05/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/045,467

Applicant(s)

CHAN ET AL.

Examiner

Leland R. Jorgensen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1 and 4 – 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Hiroshi, USPN 5,995,186.

Claim 1

Hiroshi teaches a liquid crystal display device comprising a first substrate 27; a second substrate 26 facing the first substrate, and a space for housing liquid crystal molecules 78 being formed between the first substrate and the second substrate. Hiroshi, col. 2, line 64 – col. 3, line 20; and figures 2a – 2b. See also Hiroshi, col. 1, lines 29 – 49; and figures 1a – 1d. A plurality of liquid crystal molecules are formed in the space in a predetermined arrangement. Hiroshi, col. 3, lines 10 - 20; and figures 2a and 2c. A first electrode 48 with a first end is formed on the first substrate and a second electrode 49 with a second end is formed on the first substrate with a discharge gap being formed between the first end and the second end. Hiroshi, col. 3, lines 15 – 20. When an external voltage is applied between the first and the second electrodes, an electrical field is generated to change the arrangement of the liquid crystal molecules. Hiroshi, col. 3, lines 10 - 14; and figures 2b and 2d.

Claim 4

Hiroshi shows that the predetermined arrangement of the liquid crystal molecules is in a horizontal alignment, each liquid crystal molecule has a longitudinal axe, and the longitudinal

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axe is substantially parallel to the first substrate and perpendicular to a line formed by the first end and the second end. Hiroshi, col. 1, lines 9 – 20, 61 – 65; and figures 2a and 2c.

Claim 5

Hiroshi shows that the predetermined arrangement of the liquid crystal molecules is in a horizontal alignment, each liquid crystal molecules has a longitudinal axe, and the longitudinal axe is substantially parallel to the second substrate and perpendicular to a line formed between the first end and the second end. Hiroshi, col. 1, lines 9 – 20, 61 – 65; and figures 2a and 2c.

Claim 6

Hiroshi shows that a line is formed between the first end and the second end, and the first electrode is symmetrical to the second electrode by the line. Hiroshi, figures 2a – 2d.

3. Claims 1 – 3 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoshida et al., USPN 6,642,984 B1.

Claim 1

Yoshida teaches a liquid crystal display device comprising a first substrate [second substrate 14] and a second substrate facing the first substrate [first substrate 12] with a space for housing liquid crystal molecules [liquid crystal layer 16] being formed between the first substrate and the second substrate. Yoshida, col. 1, lines 18 – 35; col. 10, lines 56 – 62; and figures 5A and 5B. A plurality of liquid crystal molecules are formed in the space in a predetermined arrangement. Yoshida, col. 1, lines 18 – 35; col. 10, lines 56 – 65; and figure 5B. A first electrode 23a with a first end is formed on the first substrate and a second electrode 23b with a second end, formed on the first substrate with a discharge gap being formed between the first end

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and the second end. Yoshida, col. 1, lines 18 – 35; col. 10, lines 57 – 60; and figures 5A and 5B. When an external voltage is applied between the first and the second electrodes, an electrical field is generated to change the arrangement of the liquid crystal molecules. Yoshida, col. 10, line 65 – col. 11, line 2; and figure 5B.

Claim 2

Yoshida teaches that the predetermined arrangement of the liquid crystal molecules is in a vertical alignment, each liquid crystal molecule has a longitudinal axe, and the longitudinal axe is substantially perpendicular to the first substrate. Yoshida, col. 1, lines 32 – 35; col. 10, lines 62 – 65; and figure 5.

Claim 3

Yoshida teaches that the predetermined arrangement of the liquid crystal molecules is in a vertical alignment, each liquid crystal molecule has a longitudinal axe, the longitudinal axe is substantially perpendicular to the second substrate. Yoshida, col. 1, lines 32 – 35; col. 10, lines 62 – 65; and figure 5.

Claim Rejections - 35 USC § 103

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Hiroshi or Yoshida et al. in view of Wiltshire, USPN 5,313,562.

Claim 7

Both Hiroshi and Yoshida teach that the electrode are parallel to each other. Hiroshi, figures 1c, 1d, 2c, 2d, and 5. Yoshida, col. 1, lines 36 – 39. Neither Hiroshi nor Yoshida

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specifically teach that the display cell comprises a plurality of electrode pairs with an end-to-end arrangement.

Wiltshire teaches a display cell [cell 1] with a plurality of electrode pairs [conductive strip electrodes 9,10 and 11, 12] with an end-to-end arrangement. Wiltshire, col. 2, lines 46 – 65; and figures 1 and 7.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the end-to-end arrangement of electrode pairs as taught by Wiltshire with the liquid crystal device as taught by either Hiroshi or Yoshida to control the distribution of electric potential between that is endlessly and continuously variable. Wiltshire invites such combination by teaching the following object of the invention.

It is an object of the present invention to provide an improved electrically-controllable liquid crystal wave plate suitable, in particular, for use in a polarization controller.

Wiltshire, col. 1, lines 52 – 55. Wiltshire concludes,

To summarize, in the liquid crystal wave plate device according to the invention the magnitude of the retardation and/or the direction of the optic axis are electrically controllable. The retardation is determined by the thickness of the liquid crystal layer and the voltage applied. The direction is controlled by the distribution of electric potential between a set of in-plane electrodes and is endlessly and continuously variable. The speed of the device is governed by the thickness of the cell and is comparable to that of any nematic liquid crystal device i.e. 5-50 msec. The device can be used, inter alia, for endless polarization control. It is simple and inexpensive to produce, and exhibits low loss and rapid response.

Wiltshire, col. 5, line 52 – col. 6, line 9.

Response to Arguments

5. Applicant's arguments filed 5 March 2004 have been fully considered but they are not persuasive.

In response to examiner's rejections, applicant amended claim 1 to describe the discharge gap as **axially** formed between the first end and the second end wherein an **axially symmetric** electrical field is generated. Applicant then argued that none of the prior references cited teach that the discharge gap is **axially** formed between the first end and the second end. Instead, applicant argues that the prior art teaches that discharge gap is **transversely** formed between the first and second electrode.

During examination, the claims must be interpreted as broadly as their terms reasonably allow. This means that the words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. The words in a claim are generally not limited in their meaning by what is shown or disclosed in the specification. It is only when the specification provides definitions for terms appearing in the claims that the specification can be used in interpreting claim language. MPEP 2111.01

The critical term is axially. Neither the specification nor the claim, however, define the term. *Merriam-Webster's Collegiate Dictionary* defines axially as the adverb form of axial. Axial is 1: "of, relating to, or having the characteristics of an axis 2 a: situated around, in the direction of, on, or along an axis b: extending in a direction essentially perpendicular to the plane of a cyclic structure (as of cyclohexane)." *Merriam-Webster's Collegiate Dictionary*, 10th ed., (Merriam-Webster, Inc., 1999), p 81. The difficulty is that the claim describes neither an axis nor a cyclic structure. Thus, a reasonable interpretation is that the gap and field is

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perpendicular to the end or edge of the electrode which is exactly the gap and field shown in Hiroshi, figure 2, and Yoshida, figure 5.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leland Jorgensen whose telephone number is 703-305-2650. The examiner can normally be reached on Monday through Friday, 7:00 a.m. through 3:30 p.m..

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:


(703) 872-9306

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Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office, telephone number (703) 306-0377.

lrj


DENNIS-DOON CHOW
PRIMARY EXAMINER